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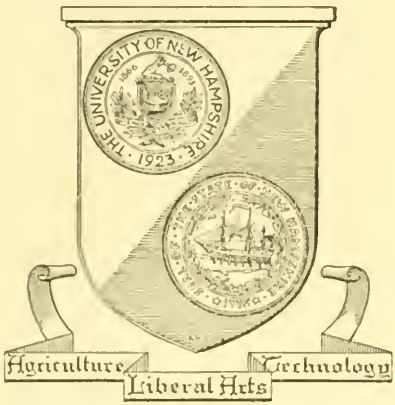

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Bulletin 317 November, 1939

THE UNIVERSITY OF NEW HAMPSHIRE
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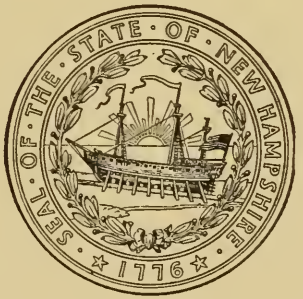
Inspection of Commercial Fertilizers for 1939

MADE FOR THE
STATE DEPARTMENT OF AGRICULTURE



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INSPECTION OF COMMERCIAL FERTILIZERS

MADE FOR THE STATE DEPARTMENT OF AGRICULTURE

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Andrew L. Felker, Commissioner of Agriculture. The state inspector, Mr. Eugene D. Sanborn, collected samples of 109 brands of fertilizer and fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1939. The general character of the brands sampled is shown by the following classification:

Complete fertilizers	84
Phosphoric acid and potash	1
Superphosphate	9
Nitrate of soda	2
Muriate of potash	2
Ground bone	3
Ground tankage	1
Natural manures	7
	109

THE FERTILIZER LAW

The purchaser of a fertilizer should familiarize himself with the full text of the fertilizer law. He should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. The law governing these matters follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package, the name, brand or

trademark under which the fertilizer is sold, the name and address of the manufacturer or importer, the location of the factory, and a chemical analysis stating the minimum percentage of nitrogen, of available phosphoric acid and of water soluble potash expressed in whole numbers.

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen percent by weight, provided however that natural animal and bird manures shall be excepted from the provisions of this section."

The state official charged with the enforcement of the fertilizer law is the Commissioner of Agriculture. Copies of the full text of the law may be obtained from his office in Concord. All inquiries concerning the law and all matters relative to the registration of brands should be addressed to his office.

The chief purpose of the official inspection required by the fertilizer law is to protect the consumer against the misbranded products which would doubtless soon appear upon the market if the sale of fertilizer was not under state regulation. The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid and potash. The presence of these constituents can only be determined by a chemical analysis. To insure that they are being furnished by all manufacturers in the guaranteed amounts, it is considered necessary that each brand of fertilizer offered for sale be officially inspected and analyzed one or more times each year. When failure to meet the guarantee is proven by chemical analysis, the prosecution or seizure provisions of the law may be invoked. The purchaser's refusal to buy a fertilizer which does not conform to the law in every respect will not only assist

in the enforcement of the law but will at the same time insure himself the protection of the law. If the buyer fails to assure himself that the legal requirements have been met, he accepts the fertilizer at his own risk.

All samples reported in this bulletin were officially taken by an inspector appointed by the Commissioner of Agriculture. The chemical analyses were made by the official methods of the Association of Official Agricultural Chemists.

In Table I are tabulated the grades of complete fertilizers analyzed in this year's inspection, the number of brands sampled by the inspector in each grade, the average per cent of nitrogen, of available phosphoric acid, of water soluble potash and the average retail price per ton.

TABLE I

Formula	Number of brands	Average per cent nitrogen	Average per cent available phosphoric acid	Average per cent soluble water potash	Average retail price per ton
3—10—4	4	3.25	10.02	4.23	33.85
3—10—6	2	3.30	9.86	6.31	32.60
3—12—6	1	3.68	11.08	6.36	——
4—8—4	8	4.03	7.94	4.16	34.00
4—8—7	1	4.00	8.40	7.07	32.94
4—8—8	1	4.33	8.20	8.94	30.40
4—8—10	10	4.12	8.06	10.22	37.73
4—12—4	3	4.27	11.94	4.28	32.20
4—12—6	1	4.16	11.77	6.10	36.36
4—16—4	1	4.01	16.01	4.40	36.00
4—16—20	2	4.07	15.54	20.43	44.89
5—8—7	11	5.05	8.01	6.97	38.09
5—8—10	2	5.14	8.38	10.10	38.29
5—10—4	2	5.28	10.67	4.57	75.00
5—10—5	1	4.91	10.02	5.38	36.00
5—10—10	1	5.18	9.70	10.51	52.00
5—15—5	1	5.03	15.06	5.30	40.00
6—8—6	1	6.37	8.00	6.56	29.20
7—5—3	1	6.60	5.01	3.22	50.00
7—6—6	5	7.10	6.47	5.86	40.00
7—7—7	3	7.06	7.35	7.00	44.33
7—14—19	1	7.44	13.86	20.22	42.80
8—5—8	1	8.07	8.02	7.59	53.00
8—6—2	3	8.01	6.89	2.22	52.33
8—8—4	1	8.09	8.17	4.00	47.00
8—16—14	5	8.00	16.34	14.28	53.59
8—16—16	4	7.84	15.51	16.18	47.95
8—16—20	5	7.75	15.56	21.00	59.00
8—24—8	1	8.11	26.35	8.26	43.80
10—6—4	1	10.25	7.15	4.80	32.80

CONFORMITY TO GUARANTEE

Sixty-six of the 109 brands analyzed equalled or exceeded the manufacturer's guarantee. Two brands were below the guarantee in each of the three constituents, total nitrogen, available phosphoric acid and water soluble potash. Seven brands were below guarantee in two of the three constituents, five in nitrogen and available phosphoric acid, and two in nitrogen and potash. Thirty-four brands failed to meet the guarantee in only one constituent.

Including all the brands referred to above, 18 brands were found to contain less than the guaranteed amount of nitrogen. The greatest deficiency was 0.61 per cent. The average of the other 17 deficiencies was 0.20 per cent. Twenty-two brands failed to meet the guarantee in available phosphoric acid. One brand was deficient 1.85 per cent. The average of the other 21 deficiencies was 0.50 per cent. Twelve brands contained less potash than was guaranteed. The greatest deficiency was 1.14 per cent. The average of the other 11 deficiencies was 0.39 per cent.

Seventeen brands were guaranteed to contain magnesium oxide. All fully met the guarantee.

In the tabulation of the analyses in the following pages deficiencies of one-fourth of one per cent or more are shown in italic type. The manufacturers are arranged alphabetically. The brand name is listed alphabetically or numerically by formula under the manufacturer.

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Agricultural Chemical Co. North Weymouth, Mass.										
AA Complete Manure with 10% Potash 4-8-10	4.00	4.19	.....	8.59	8.00	8.05	10.00	10.46	.....	.....
AA Corn Favorite 3-10-4	3.00	3.16	.....	11.24	10.00	10.48	4.00	4.04	.....	.....
AA Monarch Fertilizer 4-8-4	4.00	3.95	.....	8.33	8.00	*7.64*	4.00	4.23	.....	.....
AA Potato and Vegetable Fertilizer 5-8-7	5.00	4.92	.....	8.85	8.00	8.05	7.00	7.04	.....	.....
AA Top Dresser 7-7-7	7.00	7.01	.....	7.77	7.00	7.55	7.00	*6.67*	.....	.....
AA 8-16-16	8.00	7.76	.....	16.25	16.00	15.77	16.00	16.14	.....	.....
Agrico 3-10-6 for Corn	3.00	3.57	.....	10.81	10.00	*9.70*	6.00	6.43	.....	.....
Agrico 4-8-10 for New England	4.00	4.09	.....	8.52	8.00	8.00	10.00	10.00	.....	.....
Agrico 4-12-6 for Corn	4.00	4.16	.....	12.92	12.00	11.77	6.00	6.10	.....	.....
Agrico 4-16-20 for Seeding Down	4.00	*3.74*	.....	15.84	16.00	*15.38*	20.00	*18.86*	.....	.....
Agrico 5-8-7 for Potatoes and Vegetables	5.00	5.04	.....	8.72	8.00	8.25	7.00	*6.49*	.....	.....
Agrico 5-8-10 for Aroostook with 10% Potash	5.00	5.09	.....	8.74	8.00	8.18	10.00	10.17	.....	.....
Agrico 8-6-2 Country Club Fertilizer	8.00	7.80	.....	6.58	6.00	6.18	2.00	2.09	.....	.....
Agrico 8-8-4 for Fruit	8.00	8.09	.....	8.39	8.00	8.17	4.00	4.00	.....	.....
Agrico 8-16-14 for Potatoes, Double Strength	8.00	7.80	.....	16.18	16.00	16.02	14.00	14.05	.....	.....
Agrico 8-16-20 for Potatoes, Double Strength	8.00	7.84	.....	16.31	16.00	16.00	20.00	20.76	.....	.....
Pulverized Sheep and Goat Manure	1.25	1.41	1.00	1.09	.....	0.97	2.00	3.21	.....	.....

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Apothecaries Hall Co. Waterbury, Conn.										
Liberty High Grade Market Garden 5-8-7	5.00	5.47	.....	8.89	8.00	8.46	7.00	7.05	.....	.....
Liberty Potato and General Crops 4-8-10	4.00	4.26	.....	8.73	8.00	8.07	10.00	10.24	.....	.....
Liberty Special Fertilizer for Fruit and Grass 7-7-7	7.00	7.16	.....	7.66	7.00	7.09	7.00	7.26	.....	.....
Armour Fertilizer Works Cartaret, N. J.										
Armour's Big Crop 3-10-6 Fertilizer	3.00	3.03	.....	10.85	10.00	10.01	6.00	6.19	1.00	1.66
Armour's Big Crop 4-8-4 Fertilizer	4.00	4.03	.....	8.72	8.00	8.25	4.00	4.08	.....	.....
Armour's Big Crop 4-8-10 Fertilizer	4.00	4.03	.....	8.77	8.00	8.19	10.00	10.11	1.00	1.86
Armour's Big Crop 4-12-4 Fertilizer	4.00	4.16	.....	12.50	12.00	11.79	4.00	4.00	1.00	1.56
Armour's Big Crop 5-8-7 Fertilizer	5.00	5.01	.....	8.80	8.00	8.24	7.00	7.05	1.00	1.90
Armour's Big Crop 5-15-5 Fertilizer	5.00	5.03	.....	15.69	15.00	15.06	5.00	5.30	.....	.....
Armour's Big Crop 7-7-7 Fertilizer	7.00	7.01	.....	7.87	7.00	7.42	7.00	7.06	.....	.....
Armour's Big Crop 8-16-20 Fertilizer	8.00	7.56	.....	16.25	16.00	16.00	20.00	21.85	.....	.....
Chilean Nitrate Sales Corp. New York, N. Y.										
Champion Brand Chilean Nitrate of Soda	16.00	16.07	.....	.....	.....	.....	.....	.....	.....	.....

Consolidated Rendering Co. Boston, Mass.										
Arcadian Nitrate of Soda	16.00	16.04	.....	.....	.....	.....	.....	.....	.....	.....
Competitive Brand 8-16-16	8.00	*7.69*	.....	14.45	16.00	*14.31*	16.00	17.20	.....	.....
Corenco 3-10-4 Animal Brand	3.00	3.27	.....	10.77	10.00	10.00	4.00	4.00	.....	.....
Corenco 4-8-4 Corn and Vegetable	4.00	4.02	.....	8.45	8.00	*7.49*	4.00	4.49	.....	.....
Corenco 4-8-10 Potato Grower	4.00	4.09	.....	8.46	8.00	8.00	10.00	10.17	.....	.....
Corenco 5-8-7 General Crop Manure	5.00	5.02	.....	9.06	8.00	*6.27*	7.00	7.42	.....	.....
Corenco 7-6-6 Complete Fruit and Top Dressing	7.00	7.02	.....	6.42	6.00	6.00	6.00	6.05	.....	.....
Corenco 8-16-14 Two in One	8.00	8.23	.....	18.94	16.00	18.09	14.00	14.03	.....	.....
Corenco 8-16-20 Two in One	8.00	*7.39*	.....	14.55	16.00	*14.15*	20.00	21.63	2.00	2.50
Corenco Sheep Manure	1.25	1.54	1.00	0.89	.....	0.60	2.00	3.16	.....	.....
Corenco Superphosphate 16%	.....	.....	.....	17.40	16.00	16.89	.....	.....	.....	.....
Corenco Superphosphate 20%	.....	.....	.....	20.75	20.00	20.53	.....	.....	.....	.....
Ground Tankage	7.40	7.67	9.15	13.30	.....	8.52	.....	.....	.....	.....
Muriate of Potash	.....	.....	.....	.....	.....	.....	60.00	60.60	.....	.....
New England 8-6-2 Putting Green Special	8.00	8.01	.....	7.48	6.00	7.06	2.00	2.16	.....	.....
Eastern States Farmers' Exchange Springfield, Mass.										
Eastern States Muriate of Potash	.....	.....	.....	.....	.....	.....	60.00	60.66	.....	.....
Eastern States Open Formula Fertilizer 4-8-8	4.00	4.33	.....	9.04	8.00	8.20	8.00	8.94	4.00	5.19
Eastern States Open Formula Fertilizer 4-12-4	4.00	4.39	.....	13.15	12.00	12.00	4.00	4.60	2.00	3.41
Eastern States Open Formula Fertilizer 4-16-20	4.00	4.39	.....	16.27	16.00	*15.69*	20.00	21.99	1.60	3.11
Eastern States Open Formula Fertilizer 6-8-6	6.00	6.37	.....	8.88	8.00	8.00	6.00	6.56	3.00	3.93
Eastern States Open Formula Fertilizer 7-14-19	7.00	7.44	.....	14.11	14.00	13.86	19.00	20.22	2.00	3.03
Eastern States Open Formula Fertilizer 8-16-16	8.00	8.03	.....	16.84	16.00	16.55	16.00	16.10	2.00	3.30

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Eastern States Open Formula Fertilizer 8-24-8	8.00	8.11	.....	26.60	24.00	26.35	8.00	8.26	1.40	2.64
Eastern States Open Formula Fertilizer 10-6-4	10.00	10.25	.....	7.58	6.00	7.15	4.00	4.80	3.00	4.39
Eastern States 20% Superphosphate	.....	.....	20.50	21.95	20.00	20.81	.....	.....	.....	.....
International Agricultural Corp. Woburn, Mass.										
Bone Meal	2.47	3.09	23.00	23.82	.....	19.42	.....	.....	.....	.....
Caribee Green and Fairway 7-5-3 Fertilizer	7.00	*6.60*	.....	5.19	5.00	5.01	3.00	3.22	.....	.....
Caribee Market Garden Fertilizer 5-10-10	5.00	5.18	.....	10.41	10.00	*9.70*	10.00	10.51	2.00	2.83
International Caribee Sheep Manure	1.25	2.06	1.00	2.24	.....	2.04	2.00	3.35	.....	.....
International 4-8-4 Fertilizer	4.00	4.04	.....	8.77	8.00	8.34	4.00	4.20	.....	.....
International 4-8-7 Fertilizer	4.00	4.00	.....	8.65	8.00	8.40	7.00	7.07	.....	.....
International 4-8-10 Fertilizer	4.00	4.03	.....	8.83	8.00	8.44	10.00	10.02	.....	.....
International 5-8-7 Fertilizer	5.00	4.88	.....	9.10	8.00	8.77	7.00	6.85	.....	.....
International 5-8-10 Fertilizer	5.00	5.18	.....	8.90	8.00	8.57	10.00	10.03	.....	.....
International 7-6-6 Fertilizer	7.00	7.00	.....	6.69	6.00	6.46	6.00	6.03	.....	.....
International 8-16-14 Fertilizer	8.00	*7.69*	.....	15.83	16.00	*15.28*	14.00	14.84	2.00	2.28
International 8-16-16 Fertilizer	8.00	7.87	.....	15.86	16.00	*15.40*	16.00	*15.29*	2.00	2.52
International 8-16-20 Fertilizer	8.00	8.05	.....	15.84	16.00	*15.62*	20.00	20.07	2.00	3.26
International 16% Superphosphate	.....	.....	.....	16.74	16.00	16.06	.....	.....	.....	.....
International 20% Superphosphate	.....	.....	.....	21.42	20.00	20.57	.....	.....	.....	.....

Mechling Bros. Chemicals, Camden, N. J.										
Veget-Aid 5-10-4	5.00	5.45	.....	11.59	10.00	11.23	4.00	5.13	.....	.....
Merrimack Farmers' Exchange, Concord, N. H.										
Merrimack Brand 0-16-8	.....	.....	.....	16.97	16.00	16.35	8.00	8.03	.....	.....
Merrimack Brand 3-10-4	3.00	3.29	.....	10.78	10.00	10.22	4.00	4.08	.....	.....
Merrimack Brand 4-8-4	4.00	4.13	.....	8.56	8.00	*7.72*	4.00	4.34	.....	.....
Merrimack Brand 4-8-10	4.00	4.10	.....	8.55	8.00	8.01	10.00	10.34	.....	.....
Merrimack Brand 4-16-4	4.00	4.01	.....	16.70	16.00	16.01	4.00	4.40	.....	.....
Merrimack Brand 5-8-7	5.00	5.04	.....	8.66	8.00	8.13	7.00	7.24	.....	.....
Merrimack Brand 5-10-5	5.00	4.91	.....	10.24	10.00	10.02	5.00	5.38	.....	.....
Merrimack Brand 7-6-6 Top Dressing	7.00	7.02	.....	6.58	6.00	6.03	6.00	6.06	.....	.....
Merrimack Brand 8-16-14	8.00	8.01	.....	16.89	16.00	16.03	14.00	14.28	.....	.....
Merrimack Brand 8-16-20	8.00	7.89	.....	16.41	16.00	16.02	20.00	20.68	.....	.....
Miller Chemical & Fertilizer Corp., Baltimore, Md.										
Rich Yield Fertilizer 4-8-4	4.00	4.02	.....	8.33	8.00	8.04	4.00	3.82	.....	.....
Rich Yield Fertilizer 4-8-10	4.00	4.10	.....	8.45	8.00	8.15	10.00	10.12	.....	.....
Rich Yield Fertilizer 5-8-7	5.00	5.12	.....	8.36	8.00	8.05	7.00	*6.43*	.....	.....
Rich Yield Fertilizer 7-6-6	7.00	7.00	.....	7.42	6.00	7.16	6.00	5.85	.....	.....

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Premier Poultry Manure Co. Chicago, Ill.										
Premier Brand Pulverized Poultry Manure	4.93	5.52	2.75	*2.00*	2.50	*1.82*	1.30	1.36	.....	.....
Profile Fertilizer Manchester, N. H.										
Profile Sheep Fertilizer	1.22	1.73	0.37	0.44	0.34	0.36	3.15	3.06	.....	.....
John Reardon & Sons Cambridge, Mass.										
Rearco Ground Bone for Fertilizer	2.47	3.02	22.88	25.65	.....	19.95	.....	.....	.....	.....
Rogers & Hubbard Co. Portland, Conn.										
Hubbard's Corn and Grain Fertilizer 3-10-4	3.00	3.26	.....	12.52	10.00	*9.38*	4.00	4.80	.....	.....
Hubbard's Golf Course Fertilizer 8-6-2	8.00	8.22	.....	9.10	6.00	7.42	2.00	2.42	.....	.....
Hubbard's High Potash Fertilizer 4-8-10	4.00	4.07	.....	8.89	8.00	*7.70*	10.00	10.54	.....	.....
Hubbard's 16% Superphosphate	.....	.....	.....	17.12	16.00	16.29	.....	.....	.....	.....
Hubbard's 20% Superphosphate	.....	.....	.....	*20.90*	20.00	20.85	.....	.....	.....	.....
Hubbard's Top Dressing 8-5-8	8.00	8.07	8.00	9.22	5.00	8.02	8.00	*7.59*	.....	.....
Red H Brand 3-12-6	3.00	3.68	.....	12.65	12.00	*11.08*	6.00	6.36	.....	.....

Red H Brand 4-8-4	4.00	4.16	.....	9.77	8.00	8.00	4.00	4.08	.....	.....
Red H Brand 4-8-10	4.00	4.25	.....	8.81	8.00	8.01	10.00	10.19	.....	.....
Red H Brand 5-8-7	5.00	5.18	.....	8.42	8.00	*7.63*	7.00	7.52	.....	.....
Red H Brand 7-6-6	7.00	7.44	.....	7.17	6.00	6.71	6.00	*5.32*	.....	.....
Red H Brand 8-16-14	8.00	8.28	.....	16.62	16.00	16.27	14.00	14.21	.....	.....
Standard Wholesale Phosphate & Acid Works Baltimore, Md.										
Pulverized Sheep and Goat Manure	1.25	1.77	1.00	0.88	.....	0.72	2.00	2.97	.....	.....
Standard 4-8-4	4.00	3.86	.....	8.50	8.00	8.04	4.00	4.03	.....	.....
Standard 5-8-7	5.00	4.86	.....	9.58	8.00	8.25	7.00	*6.54*	.....	.....
Standard 20% Superphosphate	.....	.....	.....	21.22	20.00	21.12	.....	.....	.....	.....
Swift & Company Fertilizer Works Baltimore, Md.										
Bone Meal Fertilizer	2.47	2.97	23.00	25.10	.....	20.48	.....	.....	.....	.....
Roselawn Special Plant Food 5-8-7	5.00	5.02	.....	8.62	8.00	8.00	7.00	7.02	.....	.....
Swift's Pulverized Sheep Manure	1.85	2.06	1.00	1.38	.....	1.20	1.75	2.68	.....	.....
Vigoro Complete Plant Food	4.00	4.26	.....	12.54	12.00	12.02	4.00	4.25	.....	.....
Tennessee Corporation New York, N. Y.										
Loma 5-10-4 the Perfect Plant Food	5.00	5.10	.....	10.51	10.00	10.11	4.00	4.00	.....	.....
U. S. Phosphoric Products Corp. Tampa, Fla.										
Florida Triple Superphosphate	.....	.....	.....	48.25	47.00	47.91	.....	.....	.....	.....

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